



**UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION I
475 ALLENDALE ROAD
KING OF PRUSSIA, PA 19406-1415**

April 27, 2011

Mr. Michael J. Pacilio
Senior Vice President, Exelon Generation Company, LLC
President and Chief Nuclear Officer, Exelon Nuclear
4300 Winfield Rd.
Warrenville, IL 60555

**SUBJECT: LIMERICK GENERATING STATION, UNITS 1 AND 2 - NRC INTEGRATED
INSPECTION REPORT 05000352/2011002 AND 05000353/2011002**

Dear Mr. Pacilio:

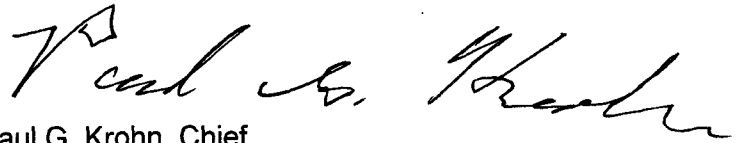
On March 31, 2011, the U. S. Nuclear Regulatory Commission (NRC) completed an inspection at your Limerick Generating Station Units 1 and 2. The enclosed integrated inspection report documents the inspection results which were discussed on April 8, 2011, with Mr. W. Maguire and other members of your staff.

The inspection examined activities conducted under your license as they relate to safety and compliance with the Commission's rules and regulations and with the conditions of your license. The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel.

This report documents one NRC-identified finding of very low safety significance (Green). The finding was determined to involve a violation of NRC requirements. Additionally, a licensee-identified violation which was determined to be of very low safety significance is listed in this report. However, because of the very low safety significance and because they are entered into your corrective action program (CAP), the NRC is treating these violations as non-cited violations (NCVs), consistent with Section 2.3.2 of the NRC Enforcement Policy. If you contest any NCV in this report, you should provide a response within 30 days of the date of this inspection report, with basis for your denial, to the U. S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001; with copies to the Regional Administration, Region I; the Director, Office of Enforcement, U. S. Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC Resident Inspector at the Limerick facility. If you disagree with the cross-cutting aspect assigned to any finding in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your disagreement, to the Regional Administrator, Region I and the NRC Senior Resident Inspector at the Limerick facility. The information you provide will be considered in accordance with Inspection Manual Chapter 0305.

In accordance with 10 Code of Federal Regulations (CFR) Part 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and your response (if any) will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of the NRC's document system (ADAMS). ADAMS is accessible from the NRC Website at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room).

Sincerely,

A handwritten signature in black ink, appearing to read "Paul G. Krohn". The signature is fluid and cursive, with a small star-like mark above the first letter of the first name.

Paul G. Krohn, Chief
Projects Branch 4
Division of Reactor Projects

Docket Nos: 50-352, 50-353
License Nos: NPF-39, NPF-85

Enclosure: Inspection Report 05000352/2011002 and 05000353/2011002
w/Attachment: Supplemental Information

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Sincerely,
/RA/

Paul G. Krohn, Chief
Projects Branch 4
Division of Reactor Projects

Docket Nos: 50-352, 50-353
License Nos: NPF-39, NPF-85

Enclosure: Inspection Report 05000352/2011002 and 05000353/2011002
w/Attachment: Supplemental Information

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U. S. NUCLEAR REGULATORY COMMISSION

REGION I

Docket Nos: 50-352, 50-353

License Nos: NPF-39, NPF-85

Report No: 05000352/2011002 and 05000353/2011002

Licensee: Exelon Generation Company, LLC

Facility: Limerick Generating Station, Units 1 & 2

Location: Sanatoga, PA 19464

Dates: January 1, 2011 through March 31, 2011

Inspectors: E. DiPaolo, Senior Resident Inspector
N. Sieller, Resident Inspector
T. Moslak, Health Physicist

Approved by: Paul G. Krohn, Chief
Projects Branch 4
Division of Reactor Projects

Enclosure

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SUMMARY OF FINDINGS

IR 05000352/2011002; 05000353/2011002; 01/01/2011-03/31/2011; Limerick Generating Station, Units 1 and 2; Problem Identification and Resolution.

The report covered a three-month period of inspection by resident inspectors and a health physicist. One Green, non-cited violation (NCV) finding was identified. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using Inspection Manual Chapter (IMC) 0609, "Significance Determination Process (SDP)." Findings for which the SDP does not apply may be Green or be assigned a severity level after NRC management review. Cross-cutting aspects associated with findings were determined using IMC 0310, "Components within the Cross-Cutting Areas," dated February 2010. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight," Revision 4, dated December 2006.

Cornerstone: Barrier Integrity

- Green. The inspectors identified a Green NCV of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action Program," because Exelon did not adequately evaluate and correct a condition adverse to quality regarding repeat failures of a Technical Specification (TS) surveillance test (ST). Specifically, on July 13, 2010, Exelon generated issue report (IR) 1091132 to document that ST-2-041-909-2, the Unit 2 Main Seam Line (MSL) Flow – High Response Time Test, had failed its past two performances. In both instances, in October 2008 and July 2010, multiple response time values exceeded the TS requirements, and Exelon had to replace several relays to bring the values back into compliance. After the 2008 failure Exelon performed an apparent cause evaluation (ACE) and generated one corrective action (CA) and several action items (ACITs) to address the causes. Following the 2010 failure, Exelon did not evaluate the repeat failure or generate any additional actions. The inspectors determined that the CA and ACITs from 2008 did not thoroughly address the MSL Flow - High test failure, and the repeat test failure in 2010 was an opportunity for Exelon to re-evaluate the issue and pursue more appropriate and timely corrective actions. Exelon's failure to evaluate and correct a condition adverse to quality regarding repeat failures of a TS surveillance test was determined to be a performance deficiency (PD).

The PD was determined to be more than minor because it was associated with the System, Structure, and Component & Barrier Performance attribute of the Reactor Safety - Barrier Integrity cornerstone. The PD adversely affected the cornerstone objective of providing reasonable assurance that physical design barriers protect the public from radionuclide releases caused by accidents or events. The finding was determined to be of very low safety significance (Green) in accordance with Inspection Manual Chapter 0609, Attachment 4, "Phase 1 – Initial Screening and Characterization of Findings," because it did not represent an actual open pathway in the physical integrity of reactor containment. The inspectors determined this finding had a cross-cutting aspect in the area of Problem Identification and Resolution, Corrective Action Program, because Exelon did not thoroughly evaluate the repeat MSL response time test failures to ensure the underlying causes were identified and resolved. [P.1(c)] (Section 40A2.2)

Licensee-Identified Violations

A violation of very low safety significance, which was identified by the licensee, has been reviewed by the inspectors. Corrective actions taken or planned by the licensee have been entered into the licensee's corrective action program. This violation and corrective actions are listed in Section 4OA7 of this report.

REPORT DETAILS

Summary of Plant Status

Unit 1 began the inspection period operating at full rated thermal power (RTP). On January 21, operators reduced power to approximately 40 percent to facilitate troubleshooting of the 'A' main generator stator cooling water (SCW) pump discharge check valve, conduct control rod scram time testing, and conduct secondary plant maintenance. Power was returned to full RTP on January 23. Operators performed a follow-up down power to approximately 80 percent to facilitate a control rod pattern adjustment on January 28. The unit was returned to full RTP on January 29. On March 3, operators reduced power to approximately 90 percent to facilitate closing the #4 main turbine control valve following the discovery of an electro-hydraulic control system leak from an instrument line. Following repairs, operators returned the unit to full RTP on March 5. On March 18, operators reduced power to approximately 22 percent to facilitate removing the main turbine from service to perform extent-of-condition repairs on the EHC system and other secondary plant maintenance. The main generator was synchronized to the grid on March 20 and full RTP was attained on March 24. Later on March 24, operators conducted a planned downpower to approximately 94 percent to facilitate main turbine valve testing. Operators identified a secondary instrumentation power supply problem and performed a subsequent unplanned downpower to approximately 53 percent until repairs could be completed. Power ascension commenced on March 26, and full RTP was attained on March 28. Unit 1 remained at full RTP for the remainder of the inspection period.

Unit 2 began the inspection period operating at full RTP. On January 2, operators reduced power to approximately 88 percent to perform a control rod pattern adjustment. The unit was restored to full RTP later that day. On January 8, a planned downpower to approximately 90 percent was performed to facilitate control rod scram time testing. The unit was returned to full RTP later that day. On January 18, Unit 2 entered end-of-cycle coastdown and feedwater temperature reduction operations, as planned, in advance of the Unit 2 refueling outage. On February 25, operators inserted an unplanned manual scram per procedural requirements following a main turbine runback and the loss of both reactor recirculation pumps (RRPs) due to a sensed high temperature condition on the main generator SCW system. On February 26 operators placed Unit 2 in Operational Condition (OPCON) 4 (Cold Shutdown) to facilitate starting the 'A' RRP. A reactor startup was commenced later that day, and the main generator was synchronized to the grid on February 28. Full RTP was attained on March 2. On March 3 operators performed a follow-up downpower to approximately 75 percent to facilitate a control rod pattern adjustment, and the unit was returned to full RTP later that day. On March 27, operators commenced a reactor shutdown from a maximum attainable power of 89 percent to commence refueling outage 2R11. Unit 2 remained in the refueling outage for the remainder of the inspection period.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems and Barrier Integrity

1R01 Adverse Weather Protection

Site Imminent Weather Conditions (71111.01 - 1 sample)

Enclosure

a. Inspection Scope

The inspectors evaluated implementation of adverse weather preparation procedures as a result of a winter storm warning being issued for Montgomery County, Pennsylvania for February 1. The inspectors verified that Exelon entered the appropriate procedures and conducted walkdowns of the site, as necessary, to ensure plant equipment would not be affected by the adverse weather. The inspectors reviewed Exelon's plans to address the ramifications of potentially lasting effects that may have resulted from the adverse weather conditions. Documents reviewed are listed in the Attachment.

b. Findings

No findings were identified.

1R04 Equipment Alignment

.1 Partial Walkdown (71111.04Q – 3 samples)

a. Inspection Scope

The inspectors performed partial walkdowns of the plant systems listed below to verify operability following realignment after a system outage window or while safety-related equipment in the opposite train was inoperable, undergoing surveillance testing, was potentially degraded. The inspectors used TS, Exelon operating procedures, plant piping and instrumentation diagrams, and the Updated Final Safety Analysis Report (UFSAR) as guidance for conducting partial system walkdowns. The inspectors reviewed the alignment of system valves and electrical breakers to ensure proper in-service or standby configurations as described in plant procedures and drawings. During the walkdowns, the inspectors evaluated the material condition and general housekeeping of the systems and adjacent spaces. The documents reviewed are listed in the Attachment. The inspectors performed walkdowns of the following areas:

- Emergency diesel generator (EDG) D12 and D13 when offsite source was unavailable due to EDG D14 24-hour run on January 25;
- Unit 2 'A' and 'C' low pressure coolant injection (LPCI) trains when 'D' LPCI was out-of-service (OOS); and
- Unit 2 'B' and 'D' core spray (CS) system while protected during refueling outage (RFO) 2R11.

b. Findings

No findings were identified.

.2 Complete System Walkdowns (71111.04S – 1 sample)

a. Inspection Scope

The inspectors conducted one complete system walkdown of the Unit 2 CS system to verify that equipment was properly aligned and there were no apparent deficiencies that could affect the ability of the system to perform its functions. The walkdown included a verification of valve positions, major system components, electrical power availability,

and general equipment condition. The inspectors also reviewed outstanding maintenance work requests, outstanding design issues, a five year history of issue reports and equipment performance history to determine if there were any outstanding deficiencies that could affect the ability of the system to perform its function. The documents reviewed are listed in the Attachment.

b. Findings

No findings were identified.

1R05 Fire Protection

Fire Protection - Tours (71111.05Q – 5 samples)

a. Inspection Scope

The inspectors conducted a tour of the five areas listed below to assess the material condition and operational status of fire protection features. The inspectors verified that combustible materials and ignition sources were controlled in accordance with Exelon's procedures. Fire detection and suppression equipment was verified to be available for use, and passive fire barriers were verified to be maintained in good material condition. The inspectors also verified that station personnel implemented compensatory measures for out-of-service, degraded, or inoperable fire protection equipment in accordance with the station's fire plan. The documents reviewed are listed in the Attachment. The inspectors toured the following areas:

- Remote Shutdown Room (Fire Area 26);
- Unit 2 'B' and 'D' Residual Heat Removal (RHR) Heat Exchanger and Pump Room (Fire Area 55);
- Unit 1 Refueling Area (Fire Area 78);
- Unit 2 Refueling Area (Fire Area 78); and
- Unit 2 High Pressure Coolant Injection (HPCI) Pump Room (Fire Area 57).

b. Findings

No findings were identified.

1R06 Flood Protection Measures (71111.06 – 1 sample)

a. Inspection Scope

The inspectors reviewed the UFSAR and related flood analysis documents to identify areas that can be affected by internal flooding, to identify features designed to alert operators of a flooding event, and to identify features designed for coping with internal flooding. The inspectors performed a walkdown of the Unit 2 RHR rooms. The inspectors observed flood protection features to assess their ability to minimize the impact of a flooding event and verified that important features (i.e., door seals and floor drain check valves) had scheduled periodic preventive maintenance. The inspectors performed a review of operator actions contained in off-normal procedures for flooding to

verify that the actions can reasonably be used to achieve the desired outcome. The documents reviewed are listed in the Attachment.

b. Findings

No findings were identified.

1R11 Licensed Operator Requalification Program Quarterly Review (71111.11Q - 1 sample)

a. Inspection Scope

On January 25, 2011, the inspectors observed a licensed operator requalification simulator training session. The simulator scenario, LSES-0071, tested the operators' ability to respond to operating equipment failures, a recirculation pump seal failure, and a leak from the reactor water clean-up system. The inspectors observed licensed operator performance including operator critical tasks, which are required to ensure the safe operation of the reactor and protection of the nuclear fuel and primary containment barriers. The inspectors also assessed crew dynamics and supervisory oversight to verify the ability of operators to properly identify and implement appropriate TS actions, regulatory reports, emergency event declarations, and notifications. The inspectors observed training instructor critiques and assessed whether appropriate feedback was provided to the licensed operators.

b. Findings

No findings were identified.

1R12 Maintenance Effectiveness (71111.12Q – 2 samples)

a. Inspection Scope

The inspectors evaluated Exelon's work practices and follow-up corrective actions for two issues within the scope of the maintenance rule. The inspectors reviewed the performance history of these systems, structures, and components (SSCs) and assessed the effectiveness of Exelon's corrective actions, including any extent-of-condition determinations to address potential common cause or generic implications. The inspectors assessed Exelon's problem identification and resolution actions for these issues to evaluate whether Exelon had appropriately monitored, evaluated, and dispositioned the issues in accordance with Exelon procedures and the requirements of 10 CFR Part 50.65, "Requirements for Monitoring the Effectiveness of Maintenance." In addition, the inspectors reviewed the maintenance rule classifications, performance criteria, and goals for these SSCs and evaluated whether they appeared reasonable and appropriate. The documents reviewed are listed in the Attachment. The inspectors reviewed the following issues:

- IR 1124563, Unit 2 CS inverter failure; and
- Unit 1 and Unit 2 main steam line (MSL) response time test failures.

b. Findings

No findings were identified.

1R13 Maintenance Risk Assessments and Emergent Work Control (71111.13 - 6 samples)

a. Inspection Scope

The inspectors evaluated the effectiveness of Exelon's maintenance risk assessments required by 10 CFR Part 50.65(a)(4). This inspection included discussion with control room operators and risk analysis personnel regarding the use of Exelon's on-line risk monitoring software. The inspectors reviewed equipment tracking documentation, daily work schedules, and performed plant tours to gain assurance that the actual plant configuration matched the assessed configuration. Additionally, the inspectors verified that Exelon's risk management actions, for both planned and emergent work, were consistent with those described in Exelon procedure, ER-AA-600-1042, "On-Line Risk Management." The documents reviewed are listed in the Attachment. The inspectors reviewed the following samples:

- Unit 1 on-line risk with the 'B' SCW pump considered unavailable due to the 'A' SCW pump discharge check valve sticking open (IR 1154333);
- Unit 1 on-line risk with 'A' RHR pump inoperable during EDG D22 run on January 3, 2011;
- Unit 1 load drop and troubleshooting the 'A' SCW discharge check valve on January 22, 2011;
- Unit 2 on-line risk during emergent EDG D23 system outage window due to Fairbanks Morse Part 21 notification from February 9 -16;
- Emergent work activities, troubleshooting, and compensatory measures for Unit 2 reactor enclosure degraded plant page system (IR 1178554); and
- Unit 2 on-line risk during emergent replacement of EHC system power supply replacement on February 28, 2011.

b. Findings

No findings were identified.

1R15 Operability Evaluations (71111.15 - 6 samples)

a. Inspection Scope

The inspectors assessed the technical adequacy of a sample of six operability evaluations to ensure that Exelon properly justified TS operability and verified that the subject component or system remained available such that no unrecognized increase in risk occurred. The inspectors reviewed the UFSAR to verify that the system or component remained available to perform its intended safety function. In addition, the inspectors reviewed compensatory measures implemented to ensure that the measures worked and were adequately controlled. The inspectors also reviewed a sample of IRs to verify that Exelon identified and corrected deficiencies associated with operability evaluations. The documents reviewed are listed in the Attachment. The inspectors reviewed the following evaluations:

- IR 1162162, 'B' residual heat removal service water (RHRSW) return pipe support found out of tolerance;
- IR 1164062, Elevated particle count on HPCI booster pump oil;

- IR 1089727, Technical Evaluation of HPCI system operation causing CS system relief valve (PSV-052-1(2)F012B) to lift;
- IR 1162162, Excess gap on RHRSW pipe hanger;
- IR 1172445, Technical Evaluation of EDG 23 during time period when defective bearings were installed; and
- IR 1191498, Main turbine stop valve failed to close during test.

b. Findings

No findings were identified.

1R18 Plant Modifications (7111.18 – 1 sample)

a. Inspection Scope

The inspectors reviewed permanent modifications associated with motor control center open and close contactor replacements (IR 1165946) to ensure that installation of the modifications did not adversely affect systems important to safety. The inspectors compared the modifications with the UFSAR and TS to verify that the modifications did not affect system operability, availability, or adversely affect plant operations. The inspectors ensured that station personnel implemented the modifications, in accordance with the configuration change process and verified that necessary training to operators were implemented. The impact on existing procedures was reviewed to verify Exelon made appropriate revisions to reflect the changes. The documents reviewed are listed in the Attachment.

b. Findings

No findings were identified.

1R19 Post-Maintenance Testing (7111.19 - 5 samples)

a. Inspection Scope

The inspectors reviewed five post-maintenance tests to verify that procedures and test activities ensured system operability and functional capability. The inspectors reviewed Exelon's test procedures to verify that the procedures adequately tested the safety functions that may have been affected by the maintenance activity, and that the acceptance criteria in the procedures were consistent with information in licensing and design basis documents. The inspectors also witnessed the test or reviewed test data to verify that the results adequately demonstrated restoration of the affected safety functions. The documents reviewed are listed in the Attachment. The inspectors reviewed the following samples:

- C0233933, Replace Unit 1 reactor protection system main turbine first stage pressure bypass trip unit (PIS-001-1N652B);
- C0236457, Troubleshoot and repair Unit 1 scram discharge volume inboard vent isolation valve (XV-047-1F010) slow stroke time;
- R1156847, Place back-up voltage regulator rectifier back in service for EDG D14;

- C0236820, Replace EDG D23 engine bearings subject to Fairbanks Morse Part 21; and
- C0236624, Unit 2 fuel pool seal rupture instrument repairs.

b. Findings

No findings were identified.

1R20 Refueling and Other Outage Activities

.1 Unit 2 Refueling Outage (RFO) (71111.20 - 1 partial sample)

a. Inspection Scope

The inspectors reviewed the station's work schedule and outage risk plan for the Limerick Unit 2 maintenance and refueling outage (2R11), which commenced on March 28, 2011. The inspectors reviewed Exelon's development and implementation of outage plans and schedules to verify that risk, industry experience, previous site-specific problems, and defense-in-depth were considered. At the end of the inspection period, Unit 2 was in OPCON 5 (Refueling), with the reactor cavity flooded. This sample will be completed in the second quarter of 2011 after Unit 2 returns to OPCON 1. Documents reviewed are listed in the Attachment. During the outage, the inspectors observed portions of the shutdown and cooldown processes and monitored Exelon controls associated with the following outage activities:

- Configuration management, including maintenance of defense-in-depth, commensurate with the outage plan for the key safety functions and compliance with the applicable TS when taking equipment OOS;
- Post-shutdown primary containment walkdown to identify any abnormal conditions that may have existed during the previous operating cycle;
- Implementation of clearance activities and confirmation that tags were properly hung and that equipment was appropriately configured to safely support the associated work or testing;
- Installation and configuration of reactor coolant pressure, level, and temperature instruments to provide accurate indication and instrument error accounting;
- Status and configuration of electrical systems and switchyard activities to ensure that TS were met;
- Monitoring of decay heat removal operations;
- Impact of outage work on the ability of the operators to operate the spent fuel pool cooling system;
- Reactor water inventory controls, including flow paths, configurations, alternative means for inventory additions, and controls to prevent inventory loss;
- Activities that could affect reactivity;
- Maintenance of secondary containment as required by TS;
- Refueling activities, including fuel handling and fuel receipt inspections; and
- Identification and resolution of problems related to refueling outage activities.

b. Findings

No findings were identified.

2 Unit 1 Manual Scram Forced Outage (71111.20 - 1 Sample)

a. Inspection Scope

The inspectors evaluated the activities associated with the forced outage (2F43) that occurred as a result of a Unit 2 manual reactor scram on February 25, 2011. Operators inserted a manual scram per procedural requirements in response to the trip of both RRP motor-generator sets. The RRP motor-generators tripped as designed following a main turbine runback as a result sensed high temperature on the main generator SCW system. Unit 2 was taken to OPCI 4 (Cold Shutdown) to facilitate recovery from the forced outage. A reactor startup was commenced on February 26 following reviews and the completion of other maintenance activities. The documents reviewed are listed in the Attachment. From February 26 through March 3, 2011, the inspectors monitored the activities listed below:

- Limerick's forced outage plan, including appropriate consideration of risk, industry operating experience, and previous site-specific problems;
- Plant Operations Review Committee and Outage Control Center meetings;
- Reactor water inventory controls, including flow paths, configurations, alternative means for inventory additions, and controls to prevent inventory loss;
- Monitoring of decay heat removal operations;
- Identification and resolution of problems related to refueling outage activities; and
- Portions of the reactor startup and ascension to full-power operation.

b. Findings

No findings were identified.

1R22 Surveillance Testing (71111.22 – 5 samples; 2 routine surveillances and 3 in-service testing (IST))

a. Inspection Scope

The inspectors either witnessed the performance of, or reviewed test data, for five surveillance tests (STs) associated with risk-significant SSCs. The reviews verified that Exelon personnel followed TS requirements and that acceptance criteria were appropriate. The inspectors also verified that the station established proper test conditions, as specified in the procedures, that no equipment preconditioning activities occurred, and that acceptance criteria were met. The documents reviewed are listed in the Attachment. The inspectors reviewed the following samples:

- ST-6-012-231-0, 'A' Loop RHRSW Pump, Valve and Flow Test (IST);
- ST-6-055-200-1, Unit 1 HPCI Valve Test (IST);
- ST-6-092-324-1, D14 Diesel Generator LOCA/LOAD Reject Testing and Fast Start Operability Test Run;
- PM 392607, Perform loaded test of B.5.b portable 125VDC power supply for safety/relief valve operation; and
- ST-6-047-200-1, Scram Discharge Volume Valve Exercise Test (IST).

b. Findings

No findings were identified.

Cornerstone: Emergency Preparedness

1EP6 Drill Evaluation (71114.06 – 1 sample)

The inspectors observed a tabletop drill in the Technical Support Center conducted on February 1, 2011, to assess Exelon's emergency response organization's (ERO's) implementation of the Limerick emergency plan and implementing procedures. The inspectors reviewed the ERO's response to simulated degraded plant conditions to identify weaknesses and deficiencies in classification, notification, and protective action recommendation development activities. The inspectors observed Exelon's critiques of the drill to evaluate their ability to identify weaknesses and deficiencies at an appropriate threshold. The inspectors verified that the licensee appropriately assessed ERO performance with regard to activities contributing to the Drill and Exercise performance indicator (PI) training evolution and drills.

b. Findings

No findings were identified.

2. RADIATION SAFETY

Cornerstone: Occupational Radiation Safety

2RS02 Occupational ALARA Planning and Controls (71124.02 – 1 partial sample)

a. Inspection Scope

During the period January 10 - 14, 2011, the inspector conducted the following activities to verify that the licensee was properly implementing operational, engineering, and administrative controls to maintain personnel exposure as low as is reasonably achievable (ALARA) in making preparations for the Unit 2 Spring RFO (2R11).

Implementation of this program was reviewed against the criteria contained in 10 CFR 20, applicable industry standards, and the licensee's procedures. Documents reviewed are listed in the Attachment.

Radiological Work Planning

The inspector reviewed the preparations being made for performing radiologically significant tasks during the Spring 2011 Unit 2 RFO (2R11). Included in this review were the ALARA Plans (AP) for all jobs whose dose was estimated to exceed 5 person-rem. These jobs included replacement of the 2B RHR heat exchanger (AP 2011-027), reactor cavity work platform activities (AP 2011-041), reactor cavity decontamination (AP 2011-042), refuel floor middle activities (2011-039), and reactor reassembly (AP 2011-040).

In performing this review, the inspector evaluated contamination control measures, use of portable ventilation systems, use of temporary shielding, and the control of system

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drain-downs. Additionally, the inspector evaluated the departmental interfaces between radiation protection, operations, maintenance crafts, and engineering to identify missing ALARA program elements and potential interface problems. The evaluation was accomplished by reviewing recent Station ALARA Council meeting minutes, Nuclear Oversight Objective Evidence Reports, and interviewing the site Radiation Protection Manager and Radiological Engineering Manager regarding the 2R11 preparations.

b. Findings

No findings were identified.

2RS03 In-Plant Airborne Radioactivity Control and Mitigation (71124.03 – 1 partial sample)

a. Inspection Scope

During the period January 10 - 14, 2011, the inspector conducted the following activities to verify that in-plant airborne concentrations of radioactive materials were being controlled and monitored, and to verify that the practices and use of respiratory protection devices were properly implemented.

Implementation of these programs was evaluated against the criteria contained in 10 CFR 20, applicable industry standards, and the licensee's procedures. Documents reviewed are listed in the Attachment.

Engineering Controls

The inspector verified that the licensee uses installed ventilation systems as part of its engineering controls (in lieu of respiratory protection devices) to control airborne radioactivity. The inspector reviewed procedural guidance for use of an installed system, the control room emergency fresh air system (CREFAS) and determined that the system was operable. The inspector reviewed surveillance testing procedures and related data to confirm that the CREFAS airflow capacity, flow path, and charcoal/HEPA filter efficiencies met regulatory criteria and are consistent with maintaining concentrations of airborne radioactivity as low as practicable. The inspector verified the system configuration by walking down components with the cognizant system engineer.

The inspector evaluated the use of in-plant continuous air monitors to determine if the monitors were appropriately located in areas where airborne radioactivity could potentially result from normal plant operations and that the systems were operable. With the assistance of a senior radiation technician, the inspector observed weekly source checks of monitors located in the turbine buildings, fuel floor, reactor buildings, and technical support center, and determined that the alarm setpoints were appropriately established.

Through review of relevant procedures and analytical data, the inspector determined that the licensee has established an alpha and transuranic radiation monitoring program. Included in this program were trigger points for conducting additional measurements to assure that the airborne concentrations were properly characterized and that bioassay measurements were taken, should the need arise.

Use of Respiratory Protection Devices

The inspector observed the respirator fit testing of four (4) individuals to determine if the testing was appropriately conducted per the procedural guidance. Additionally, the inspector confirmed that the individuals tested had completed the requisite training and were medically qualified to wear a respirator.

The inspector examined various negative pressure, self-contained, and supplied air respiratory protection devices and determined that these devices were certified for use by the National Institute for Occupational Safety and Health/Mine Safety and Health Administration.

The inspector reviewed the records of air testing for supplied service air devices and self-contained breathing apparatus (SCBA). The air used in these devices appropriately exceeded the quality requirements for Grade D quality.

Self-Contained Breathing Apparatus for Emergency Use

The inspector evaluated the adequacy of the respiratory protection program regarding the maintenance and issuance of SCBA to emergency response personnel. Training and qualification records were reviewed for at least three (3) licensed operators from each of the operating shifts, and for selected radiation protection personnel who would wear SCBAs in the event of an emergency. The inspector observed technicians perform functional inspections on three (3) SCBAs staged in the Control Room and two (2) SCBAs staged on the Unit 2 turbine deck. Maintenance, hydrostatic test records, and flow test records for selected SCBAs, staged in other plant areas, were reviewed. The method of refilling SCBA cylinders was evaluated and the compressor air sample results were reviewed to confirm that the air quality met CGA G-7.1, Grade E (2004) standards.

Through review of training lesson plans and interviews, the inspector confirmed that individuals qualified to wear SCBAs were trained in replacing spent air cylinders.

Problem Identification and Resolution

Through review of IRs and Nuclear Oversight audits and field observations, the inspector verified that problems associated with the control and mitigation of in-plant airborne radioactivity are being identified at an appropriate threshold and are properly addressed for resolution in the corrective action program.

b. Findings

No findings were identified.

4. OTHER ACTIVITIES

4OA1 Performance Indicator (PI) Verification

Initiating Events and Mitigating Systems Cornerstone PIs (71151 – 6 samples)

a. Inspection Scope

The inspectors sampled Exelon's submittal of the Initiating Events cornerstone and Mitigating Systems cornerstone PIs listed below to verify the accuracy of the data recorded from January 2010 - December 2010. The inspectors utilized performance indicator definitions and guidance contained in Nuclear Energy Institute (NEI) 99-02, "Regulatory Assessment Performance Indicator Guidelines," Revision 6, to verify the basis in reporting for each data element. The inspectors reviewed various documents, including portions of the main control room logs, issue reports, power history curves, work orders, and system derivation reports. The inspectors also discussed the method for compiling and reporting performance indicators with cognizant engineering personnel and compared graphical representations from the most recent PI report to the raw data to verify that the report correctly reflected the data. The documents reviewed are listed in the Attachment.

Cornerstone: Initiating Events

- Units 1 and 2 Unplanned Power Changes (IE03).

Cornerstone: Mitigating Systems

- Units 1 and 2 Mitigating System Performance Index (MSPI) - High Pressure Injection System (MS07); and
- Units 1 and 2 MSPI - Heat Removal System (MS08).

b. Findings

No findings of significance were identified.

4OA2 Identification and Resolution of Problems (71152 – 1 sample)

.1 Review of Items Entered into the Corrective Action Program (CAP)

a. Inspection Scope

As required by Inspection Procedure 71152, "Identification and Resolution of Problems," and in order to help identify repetitive equipment failures or specific human performance issues for follow-up, the inspectors screened all items entered into Limerick's CAP. The inspectors accomplished this by reviewing each new condition report, attending management review committee meetings, and accessing Exelon's computerized database.

b. Findings

No findings were identified.

.2 Annual Sample: Main Steam Line Flow – High Response Time Test Repeat Failures

a. Inspection Scope

The inspectors reviewed Exelon's actions in response to a repeat failure of the Unit 2 MSL Flow – High Response Time Test. The inspectors reviewed the original failure to assess the adequacy of Exelon's evaluation and corrective actions. The inspectors

reviewed the repeat failure to determine whether Exelon appropriately evaluated the new information and assessed whether additional actions were warranted. The inspectors interviewed plant personnel, reviewed CAP documents, and held discussions with Exelon management. Specific documents reviewed are listed in the Attachment.

b. Findings and Observations

Introduction. The inspectors identified a Green NCV of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action Program," because Exelon did not adequately evaluate and correct a condition adverse to quality regarding repeat failures of a TS ST.

Description. On July 13, 2010, Exelon generated IR 1091132 to document that ST-2-041-909-2, the Unit 2 MSL Flow - High Response Time Test, Revision 9, had failed its past two performances. In both instances, in October 2008 and July 2010, multiple response time values exceeded the TS requirements, and Exelon had to replace several relays to bring the values back into compliance. The IR stated that the Agastat relays being acquired for this application appeared to be slower than the older Agastat relays. The IR recommended several actions to address the problem, including: working with the vendor to determine if any changes were made to the manufacturing process; evaluating whether a license amendment could be submitted to change or eliminate the TS requirement; and considering procurement of a faster relay. Of these three recommendations, Exelon generated a formal assignment to address only the first. Assignment 3 of IR 1091132 required Materials to work with the vendor to determine if there were any manufacturing differences that could account for the slower response times. The assignment was closed on February 3, 2011 stating: "The vendor has reviewed the data and has deemed that their manufacturing of these relays has not changed from the originals supplied and meets the industry standards for this type of relay."

The inspectors reviewed IR 1091132 and noted that Exelon had not thoroughly evaluated the repeat test failure and had not developed any corrective actions. To better understand the history of the issue, the inspectors researched the original failed ST from October 2008. The inspectors discovered that an ACE had been performed by Exelon at that time, under IR 830810. The ACE identified that the Agastat relays were, by design, too slow for the intended application. The TS required response time for the MSL Flow - High circuit was 145 msec, which was a cumulative response time for one trip unit and three relays. However, adding up the individual maximum response times specified by the vendor for the trip unit and three Agastat relays yielded a response time of 199 msec. The ACE therefore concluded that "the Tech Specs required response time was not quite compatible with the cumulative vendor specified response time of the trip unit and the relays." The ACE also noted that the cumulative response time of tests performed in 2006 and 2008 were comparatively higher than those performed in earlier years, and concluded that "based on this observation, it is suspected that the new vintage relays are slower."

The 2008 ACE resulted in one CA and several ACITs. The CA was to increase relay replacement frequency from every six years to every four years. This was based on Exelon's determination that "as a natural phenomenon, the response time of relay contacts may increase as the relays age." The ACITs included contacting the vendor to confirm that changes were not made to the relays that could have impacted the response time, and evaluating whether a TS change should be pursued to increase the

response time to make it more compatible with the vendor specified relay response times.

The inspectors determined that the CA and ACITs from 2008 did not thoroughly address the MSL Flow - High test failure, and the repeat test failure in 2010 was an opportunity for Exelon to re-evaluate the issue and pursue more appropriate and timely corrective actions. Specific rationale is provided below:

- The inspectors determined the 2008 CA was not appropriate to address the slow response time test. The action was to increase the relay replacement frequency from six years to four years. However, the inspectors noted that after the 2008 test failure, two separate relays were replaced by Exelon to bring the response time back into compliance. Both relays were only three years and seven months old. Additionally, when the 2010 test failure occurred, all of the relays in the affected circuits were less than two years old. Therefore, a four year replacement periodicity would not have prevented either ST failure. The 2010 test failure was an opportunity to identify this inconsistency and develop a more appropriate CA.
- Regarding the 2008 ACIT to contact the vendor and determine if any changes had been made to the relays, the inspectors noted that the ACIT was completed in January 2009. The closure documentation stated that "the supplier has confirmed that no changes have been made that would affect [relay] quality." Yet after the test failure in 2010, the only assignment created from IR 1091132 was to contact the vendor and determine if any changes had been made to the relays. A thorough evaluation in 2010 would have revealed that this action had already been pursued - with no success - in 2008.
- Regarding the 2008 ACIT to consider a TS amendment to change the response time requirements, the inspectors noted that this action was closed in February 2009 to another IR, IR 644942. This IR had been created by Licensing in 2007 to look into removing TS response time requirements. Despite IR 644942 being generated in 2007, and the ACIT being closed to it in 2008, as of March 2011 no actions had been taken by Exelon to initiate the TS amendment. A thorough evaluation in 2010 may have allowed Exelon to pursue this action in a more timely manner.

The inspectors discussed the above issues with Exelon management, who agreed that IR 1091132 had not been properly evaluated in 2010. Exelon generated IR 1186147 to capture this deficiency and perform an ACE. Corrective actions for the repeat Main Steam Line Flow - High Response Time Test failures will be developed from the same ACE.

Analysis. The inspectors determined that Exelon's failure to evaluate and correct a condition adverse to quality regarding repeat failures of a TS surveillance test was a performance deficiency (PD). The PD was determined to be more than minor because it was associated with the SSC & Barrier Performance attribute of the Reactor Safety - Barrier Integrity cornerstone. This attribute includes availability and reliability of SSCs needed to maintain the containment barrier. The PD adversely affected the cornerstone objective of providing reasonable assurance that physical design barriers protect the public from radionuclide releases caused by accidents or events. Specifically, on two different instances, in 2008 and 2010, the Unit 2 MSL Flow - High Response Time Test failed to meet the response times required by the Limerick TS, which would impact the closure time for the main steam isolation valves. The finding was determined to be of

very low safety significance (Green) in accordance with Inspection Manual Chapter 0609, Attachment 4, "Phase 1 - Initial Screening and Characterization of Findings," because it did not represent an actual open pathway in the physical integrity of reactor containment.

The inspectors determined this finding had a cross-cutting aspect in the area of Problem Identification and Resolution, Corrective Action Program, because Exelon did not thoroughly evaluate the repeat MSL response time test failures to ensure the underlying causes were identified and resolved. [P.1(c)] Specifically, because Exelon did not evaluate the repeat test failure in July 2010, they did not identify that the CA from the 2008 ACE was inadequate to resolve the condition, and that the ACIT to consider a TS amendment was not being pursued in a timely manner.

Enforcement. 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," requires, in part, that measures be established to assure that conditions adverse to quality, such as failures, deficiencies, and non-conformances, are promptly identified and corrected. Contrary to this requirement, Exelon failed to correct a condition adverse to quality associated with repeat failures of ST-2-041-909-2, the U2 Main Seam Line Flow – High Response Time Test, on October 14, 2008 and July 13, 2010. Because this violation was determined to be of very low safety significance and has been entered into the Exelon Corrective Action Program as IR 1186147, it is being treated as an NCV, consistent with section 2.3.2 of the Enforcement Policy. **(NCV 05000352, 353/2011001-01, Failure to Address Repeat TS Response Time Test Failures.)**

4OA3 Event Follow-up (71153 – 3 samples)

.1 Plant Events

a. Inspection Scope

For the three plant events listed below, the inspectors reviewed and/or observed plant parameters, reviewed personnel performance, and evaluated performance of mitigating systems. The inspectors communicated the plant events to appropriate regional personnel and compared the event details with criteria contained in Inspection Manual Chapter 0309, "Reactive Inspection Decision Basis for Reactors," for consideration of potential reactive inspection activities. As applicable, the inspectors verified that Exelon made appropriate emergency action classification assessments and properly reported the event in accordance with 10 CFR Parts 50.72 and 50.73. The inspectors reviewed Exelon's follow-up actions related to the events to assure that appropriate corrective actions were implemented commensurate with their safety significance.

- Fairbanks Morse EDG Part 21 impact on EDG D23;
- Unit 2 manual scram due to loss of recirculation pumps following a SCW runback on February 25, 2011; and
- Unit 1 unplanned down power to 90 percent on March 3 due to electro-hydraulic control system leak on #4 control valve instrument fitting.

b. Findings

No findings were identified.

- .2 Licensee Event Report (LER) 05000353/2011001-00: Condition Prohibited by Technical Specifications due to Inoperable Remote Shutdown Panel Instrument. On January 26, 2011, during surveillance testing, Exelon identified that the Unit 2 'A' RHR heat exchanger bypass valve position indication on the remote shutdown panel was inoperable per TS LCO 3.3.7.4, "Remote Shutdown System Instrumentation and Controls," due to excessive instrument drift. The investigation determined that the main control room indication for the valve was identified as drifting out of tolerance on March 20, 2009. At the time of identification, operators did not identify that the loop transmitter was the cause of the drifting indication. The transmitter is shared by the main control room and remote shutdown panel valve indicators. Unit 2 entered OPCON 2 (Startup) on April 11, 2009. Therefore, Unit 2 entered into an OPCON when LCO 3.3.7.4 was not met which is contrary to TS LCO 3.0.4. The enforcement aspects of this issue are discussed in Section 4OA7. The inspectors did not identify any new issues during the review of the LER. This LER is closed.

4OA6 Meetings, Including Exit

On April 8, the inspectors presented the inspection results to Mr. W. Maguire and other members his staff. The inspectors confirmed that proprietary information was not included in the inspection report.

4OA7 Licensee-Identified Violations

The following violation of very low safety significance (Green) was identified by Exelon and is a violation of NRC requirements which met the criteria of the NRC Enforcement Policy for being dispositioned as an NCV.

- Unit 2 TS LCO 3.0.4 requires that, when an LCO is not met, entry into an OPCON or other condition in the Applicability shall only be made if specified conditions in LCO 3.0.4 were met. TS LCO 3.3.7.4 "Remote Shutdown System Instrumentation and Controls," requires the RHR Heat Exchanger Bypass Valve (HV-C-51-2F048A) Position Indication (0-100%) [Table 3.3.7.4-1, Instrument 15] to be restored to operable within 7 days or be in at least Hot Shutdown within the next 12 hours with an Applicability in OPCONs 1 and 2. Contrary to LCO 3.0.4, on April 11, 2009, Unit 2 entered OPCON 2 with the position indication for HV-C-51-2F048A inoperable and specified conditions in LCO 3.0.4 were not met. The cause of the failure to meet LCO 3.0.4 was due to less than adequate administrative barriers being present to allow licensed operators to properly assess the TS impact of the deficiency. Also, operators did not use all available tools and resources at that time to validate the initial operability determination. This issue was entered into Exelon's CAP as IR 1168410. The finding was determined to have very low safety significance (Green) in accordance with NRC IMC 0609, Attachment 4, "Phase 1 – Initial Screening and Characterization of Finding," Mitigating Systems, because the finding did not represent an actual loss of safety function or screen as potentially risk significant due to a seismic, flooding, or severe weather initiating event.

ATTACHMENT: SUPPLEMENTAL INFORMATION

Enclosure

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee Personnel:

W. Maguire, Site Vice President
P. Gardner, Plant Manager
S. Johnson, Assistant Plant Manager
R. Dickinson, Director of Training
E. Dennin, Director of Operations
R. Kreider, Director of Maintenance
P. Colgan, Director of Work Management
C. Gerdes, Security Manager
D. Merchant, Radiation Protection Manager
D. Palena, Manager Nuclear Oversight
J. Hunter, Manager, Regulatory Assurance
N. Dennin, Shift Operations Superintendent
J. Risteter, Manager, Technical Support Health Physics
R. Harding, Regulatory Assurance Engineer
R. Rhode – Licensed Operator Requalification Training Supervisor
M. Barth, Systems Engineer
J. Bendyk, HVAC System Engineer
T. Donovan, Radiation Protection Technician, Respiratory Protection
D. Doran, Director of Engineering
J. Duskin, Instrumentation Physicist
R. Gosby, Radiation Protection Technician, Instrumentation
C. Gray, Field Operations Manager, Radiation Protection
P. Imm, Manager, Radiological Engineering
M. McGill, Engineer, Limerick Engineering Response Team
L. Parlatore, Respiratory Protection Physicist

NRC Personnel:

E. DiPaolo, Senior Resident Inspector
N. Sieller, Resident Inspector
A. Rosebrook, Senior Project Engineer
T. Moslak, Health Physicist

Other Personnel:

M. Murphy, Inspector, Commonwealth of Pennsylvania

LIST OF ITEMS OPENED OR CLOSEDOpened

None

Closed

05000353/2011001-00	LER	Condition Prohibited by Technical Specification due to Inoperable Remote Shutdown Panel Instrument (Section 4OA3.2)
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Opened and Closed

05000352, 353/2011001-01	NCV	Failure to Address Repeat TS Response Time Test Failures (Section 4OA2.2)
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Discussed

None

LIST OF DOCUMENTS REVIEWED**Common References**

Limerick Unit 1 and Unit 2 UFSAR
 Limerick Unit 1 and Unit 2 TSs
 Limerick Unit 1 and Unit 2 Technical Requirements Manual
 Limerick Unit 1 and Unit 2 Operator Logs

Section 1R01: Adverse Weather ProtectionProcedures

SE-9, Preparation for Severe Weather, Revision 27
 SE-14, Snow, Revision 14
 WC-AA-101, On-Line Work Control Process, Revision 17

Section 1R04: Equipment AlignmentIssue Reports

1166399	1009756	1115912
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Procedures

S92.9.N, Routine Inspection of the Diesel Generators, Revision 59
 2S51.1.A (COL-1), Equipment Alignment for Automatic Operation of the RHR System in the LPCI Mode, Revision 17
 OP-AA-108-117, Protected Equipment Program, Revision 1
 2S52.1.A (COL-2), Equipment Alignment for Core Spray Loop 'B' Operation, Revision 8
 2S52.1.A (COL 1), Equipment Alignment for Core Spray Loop 'A' Operation, Revision 7
 2S52.1.A (COL 2), Equipment Alignment for Core Spray Loop 'B' Operation, Revision 8
 L-S-44, Core Spray System, Revision 10

Miscellaneous

UFSAR Section 6.3, Emergency Core Cooling Systems, Revision 15

Section 1R05: Fire Protection

Procedures

F-A-540, Limerick Generating Station Pre-Fire Plan, Common, Remote Shutdown Room, Revision 9

F-R-174, Limerick Generating Station Pre-Fire Plan, Unit 2, 'B' and 'D' RHR Heat Exchanger and Pump Rooms, Revision 6

F-R-700, Limerick Generating Station Pre-Fire Plan, Unit 1, Refueling Area Room, Revision 11

F-R-708, Limerick Generating Station Pre-Fire Plan, Unit 2, Refueling Area, Revision 7

F-R-180, Limerick Generating Station Pre-Fire Plan, Unit 2, HPCI Pump Room, Revision 8

Section 1R06: Flood Protection Measures

Procedures

UFSAR Section 9.3.3, Plant Drainage System

L-T-09, Internal Hazards Topical Design Basis Document, Revision 5

Drawing 8031-M-61, Liquid Radwaste Collection

SE-4-1, Reactor Enclosure Flooding, Revision 8

Section 1R12: Maintenance Effectiveness

Issue Reports

1090202	973821	688396	1124563
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Miscellaneous

Technical Evaluation 688396-07, Actual Impact of Failure of Inverters

Regulatory Guide 1.160, Monitoring the Effectiveness of Maintenance at Nuclear Power Plants

A1315016-09, PM Deferral for E/S X-M1-21014, June 4, 2010

A1315016-10, PM Deferral for E/S X-M1-21014, September 30, 2010

Procedures

ER-LG-310-1010, Maintenance Rule Implementation, Revision 14

MA-AA-716-210, Performance Centered Maintenance Process, Revision 10

MA-AA-716-009, Preventive Maintenance (PM) Work Order Process, Revision 5

ER-AA-310-1004, Maintenance Rule – Performance Monitoring, Revision 8

Section 1R13: Maintenance Risk Assessments and Emergent Work Control

Procedures

Troubleshooting, Rework, and Testing Control Form

WC-LG-101-1001, Guideline for the Performance of On-Line Work/On-Line System Outages, Revision 14

WC-LG-104-1001, Guideline for the Review, Screening and Execution of Operational Risk Activities, Revision 0

EP-AA-1000, Exelon Nuclear Standardized Radiological Emergency Plan, Revision 20

EP-AA-1008, Limerick Generating Station Annex, Revision 19

Miscellaneous

LG-CRM-010, Units 1 and 2 Paragon Yd Model Changes, Revision 0

Work Order

C0237126, Replace Unit 2 electro-hydraulic control system power supply

Section 1R15: Operability Evaluations

Issue Reports

1164062

Procedures

MA-AA-716-230-1001, Oil Analysis Interpretation Guide, Revision 12

Miscellaneous

Calculation M-52-23, Core Spray System Flow Device and Pressure Relief Valve Design Data, Revision 0

Calculation M-55-24, Total System Developed Head for Mode D Operation, Revision 1

Calculation M-52-32, Overpressure Protection Report for Core Spray System, Revision 1

Part 21 Notification-Turbine Control System Impact on Transient Analysis, November 12, 2004

Engineering Safety Analysis Transmittal of Design Information ES0900029, December 17, 2009

Technical Evaluation of EDG 23, March 8, 2011

Section 1R18: Plant Modifications

Issue Reports

1165946

Work Orders

R0926125-02, Clean, Examine, and Calibrate MCU D244-R-E-16

Section 1R19: Post-Maintenance Testing

Issue Reports

1163511

1159144

993047

808401

1018647

Procedures

ST-6-092-934-1, D14 Diesel Generator Governor and Voltage Regulator Post Maintenance Testing, Revision 6

ST-6-012-231-0, 'A' Loop RHRSW Pump, Valve, and Flow Test, Revision 57

RT-6-092-313-2, D23 Diesel Generator Run-In, Revision 23

MA-AA-716-012, Post Maintenance Testing, Revision 12

Miscellaneous

Drawing Number M-1-C71-1022, Elementary Diagram for Reactor Protection System, Revision 24

Drawing Number M-1-C71-1020-E-015, Elementary Diagram for Reactor Protection System, Revision 10

Fairbanks Morse Part 21 Notification Number 10-06

Regulatory Guide 1.9, Application and Testing of Safety Related Diesel Generator in Nuclear Power Plants, March 2007

IEEE Standard 387-1995, Criteria for Diesel Generator Units as Standby Power Supplies for Nuclear Power Generating Stations

Work Order

C0228961, Replace XV-047-1F010 air regulator

C0235902, Replace solenoid associated with XV-047-1F010

R1108794-01, 'A' Loop RHRSW Pump, Valve, and Flow Test, October 4, 2008

R1113372-01, 'A' Loop RHRSW Pump, Valve, and Flow Test, December 28, 2008

Section 1R20: Refueling and Other Outage Activities**Procedures**

GP-18, SCRAM/ATWS Event Review, Revision 58
 GP-2, Normal Plant Startup, Revision 136
 OU-AA-103, Shutdown Safety Management Program, Revision 11
 2GP-6.1, Shutdown Operations-Refueling, Core Alterations and Core Off-Loading, Revision 21
 GP-3, Normal Plant Shutdown, Revision 129
 OU-AB-4001, BWR Fuel Handling Practices, Revision 5
 OP-AA-300-1520, Reactivity Management-Fuel Handling Storage and Refueling, Revision 3
 S97.0.M, Refueling Platform Operation, Revision 28
 2R11 Shutdown Safety Plan

Section 1R22: Surveillance Testing**Issue Reports**

1163684	1159672	1182533	1143434	736684	1178728
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Procedures

OP-LG-108-101-1004, Valves, Revision 4
 OP-AA-103-105, Limitorque motor – operated valve operations, Revision 2
 ST-6-107-201-0, IST Valve Stroke for New Baseline, Revision 4
 TSG-4.1, Limerick Generating Station Operational Contingency Guidelines, Revision 9

Miscellaneous

C0236338, Torque packing and back seat Unit 1 HPCI main steam supply outboard isolation valve (HV-055-1F003)
 Calculation LE-0069, Class 1E 125 Volt DC System Voltage Analysis, Revision 17
 Test Results Evaluation for ST-6-092-324-1, February 22, 2011

Work Orders

R1109568, D14 governor and voltage regulator post maintenance test, January 24, 2011
 R1118302, D14 LOCA/Load Reject Testing and Fast Start Operability Test Run, February 22, 2011

2RS02 Occupational ALARA Planning and Controls**2R11 ALARA Plans (AP)**

AP 2011-010, Installation and Removal of Scaffolding, Unit 2 Drywell 2R11
 AP 2011-016, SRV Replacement 2R11 (14 planned)
 AP 2011-027, Replace 2B RHR Heat Exchanger
 AP 2011-034, Undervessel Control Rod Drive Exchange
 AP 2011-039, 2R11 Refuel Floor Outage Middle Activities
 AP 2011-040, Reactor Reassembly
 AP 2011-041, Reactor Cavity Work Platform Activities
 AP 2011-042, Reactor Cavity Decontamination

2RS03 In-Plant Airborne Radioactivity Control and Mitigation**Issue Reports**

0879950	0909005	0917008	0931820	0953303	0961486
0963706	1014292	1043823	1050097	1075743	1088502
1093113	1095677	1139033	1140518	1154820	

Procedures

RP-AA-220, Bioassay Program, Revision 7

RP-LG-220-1002, Perform Calibration Checks and Whole Body Count on the FastScan, Revision 4

RP-AA-302, Determination of Alpha Levels and Monitoring, Revision 3

RP-AA-870-1001, Set-up and Operation of Portable Air Filtration Equipment, Revision 2

RP-AA-870-1002, Use of Vacuum Cleaners in Radiologically Controlled Areas, Revision 1

RT-0-111-900-0, One Hour SCBA Cylinder Inspection and Functional Test, Revision 28

RT-0-000-981-0, Routine Bioassay, Revision 7

RP-AA-700-1301, Calibration, Source Check, Operation, and Set-up of the Eberline Beta Air Monitor, AMS-4, Revision 0

RP-AA-825-1011, Inspection and Use of the Mururoa V4 MTH2 and V\$F1 Air Supplied Suits, Revision 2

RP-AA-825-1012, Inspection and Use of the Mururoa Blu Ethyfuse/PVC PAPR Suit, Revision 2

RP-AA-443, Quantitative Respirator Fit Testing, Revision 8

RT-0-0111-900-0, One-Hour SCBA Cylinder Inspection and Functional Test, Revision 34

ST-4-078-801-0, 'A' CREFAS Charcoal Analysis, Revision 6

ST-4-078-802-0, 'B' CREFAS Charcoal Analysis, Revision 5

ST-2-078-301-0, 'A' CREFAS Functional Test, Revision 10

ST-2-078-302-0, 'B' CREFAS Functional Test, Revision 10

ST-4-078-731-0, 'A' CREFAS Charcoal Absorber/HEPA Filter Test, Revision 4

ST-4-078-732-0, 'B' CREFAS Charcoal Absorber/HEPA Filter Test, Revision 4

Analysis Reports

HP-00-11, AMS-4 Operating and Alarm Parameters, Revision 1

RP-11-01, CEDE Dose Assessment for HTM Isotopes for 2011, Revision 0

Focused Area Self-Assessments /Audits

Radiation Protection Audit NOSA-Lim-09-06

Objective Evidence Report NOSCPA-LG-10-15

Nuclear Oversight Objective Evidence Report (AR 338414)

Calibration Records Reviewed

AMS-4 No. 076441

SCBA Packs Inspected

Nos: 16, 49, 63, 76, 610

Section 4OA1: Performance Indicator VerificationMiscellaneous

LS-AA-2001, Collecting and Reporting of NRC Performance Indicator Data, Revision 13

NEI 99-02, Regulatory Assessment Performance Indicator Guideline, Revision 6

Exelon PI Summaries for 1Q10-4Q10

LG-MSPI-001, "LGS MSPI Basis Document", Revision 3

Section 4OA2: Problem Identification and ResolutionIssue Reports

1186147	1186105	644942	777148	785462
830810	1090202	831914	1091132	1049671
1050077	1052401	1053346	1053931	

Section 40A3: Event Followup**Issue Reports**

1182842 1183330

Procedures

GP-5, Steady State Operations, Revision 148

LIST OF ACRONYMS

ACE	Apparent Cause Evaluation
ACIT	Action Item
ADAMS	Agencywide Documents Access Management System
AP	ALARA Plans
CA	Corrective Action
CAP	Corrective Action Program
CFR	Code of Federal Regulations
CREFAS	Control Room Emergency Fresh Air System
CS	Core Spray
DEP	Drill and Exercise Performance
EDG	Emergency Diesel Generator
ERO	Emergency Response Organization
HPCI	High Pressure Coolant Injection
IMC	Inspection Manual Chapter
IR	Issue Report
IST	In-Service Testing
LER	Licensee Event Report
LPCI	Low Pressure Coolant Injection
MSL	Main Seam Line
MSPI	Mitigating System Performance Index
NCV	Non-Cited Violations
NEI	Nuclear Energy Institute
NRC	Nuclear Regulatory Commission
OOS	Out of Service
OPCON	Operational Condition
PD	Performance Deficiency
PI	Performance Indicator
PARS	Publicly Available Records
RRP	Recirculation Pump
RFO	Refueling Outage
RHR	Residual Heat Removal
RHRSW	Residual Heat Removal Service Water
RTP	Rated Thermal Power
SCBA	Self-Contained Breathing Apparatus
SCW	Stator Cooling Water
SDP	Significance Determination Process
SSC	Structure, System, Component
ST	Surveillance Test
TS	Technical Specification
UFSAR	Updated Final Safety Analysis Report